MONTANA OUTDOORS

SEPTEMBER / OCTOBER 1971

FIFTY CENTS

EDITORIAL CREED

To promote the preservation of a livable environment for wildlife, which is a quality environment for man

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MONTANA OUTDOORS

THE OFFICIAL PUBLICATION OF THE
MONTANA FISH AND GAME DEPARTMENT

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THE COVER

The two trophy bucks on the front cover were captured on film by Mike Sample. If deer management principles like those explained on pages 2-5 become the general rule in Montana, more hunters will find themselves looking through their scopes at trophies like these.

The artist's conception of the arctic grayling that appears on the back cover is reprinted courtesy of C. J. D. Brown, **Fishes of Montana**, Big Sky Books, 1971, Montana State University, Bozeman. (Original artwork by Michael Hammond.)

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dear F&G

WHAT KILLED THE BIRDS?

I found the article "In Defense of Pesticides" by Don I. Osburn, contained in the May/June issue, very interesting—especially his point number seven in which he states that aerial application of Baytex presents no danger to birds in the treated area.

Enclosed is a copy of page 2 from the *Sport Fishing Institute Bulletin*, August, 1969, which indicates that aerial spraying of Baytex caused the death of an estimated 5,000 birds in Grand Forks, N.D., in 1969. Actually, the article does not indicate whether or not the birds were drowned in the concentrate, which Mr. Osburn suggests is a possibility, or died as a result of the aerial application. The drowning theory does not sound very plausible to me.

Betty Morgan
Bismarck, ND

A PLUG FOR PESTICIDES

It is gratifying, in the face of our present day pessimistic society, to see that there are still some people capable of a rationalistic approach to the uses of chemicals in pesticides and herbicides. Don Osburn's article on pesticides should bring those people still capable of objective thinking back to the realities of weighing the pros and cons of a problem before crying doom. Pesticides and herbicides, **with proper use,** are still valuable and perhaps the best means of control of some of our undesirable species. If we turned our efforts to eliminating conflicts and determining the best possible use of these materials instead of simply taking the easy way out and eliminating them, we would be much better off.

As an example, snake venom when taken by direct injections from the snake can be very harmful and dangerous, but medical science has been able to use this same venom to save many lives and aid in the control of numerous diseases. Should we promote legislation to eradicate rattlesnakes?

Larry B. Blasing
Corvallis, MT

NO FISHING HERE

Your new magazine certainly informs us of your problems to preserve Montana. But most people won't really care, because they will not be able to enjoy these wonderful lands and streams you are trying to preserve.

For example: on our last trip out here, we found a good section of the lower Gallatin River posted against fishing. We politely asked to fish, offering to return all fish (we fly fish only), but were impolitely refused permission. Apparently, the ownership of this ranch was some company from elsewhere.

Perhaps your personnel could induce such ranch combines to keep their lands open, at least by permission. I must admit this was the first time in many years of trips to Montana that we were refused permission to fish.

William R. Moose
Elizabethtown, PA

FIRST ISSUE

I am very glad to be a subscriber to MONTANA OUTDOORS, and want to congratulate you on the high quality and interest of your publication.

I would like to know if it is possible to get copies of all the issues that were in Vol. 1? I would like very much to keep a complete file of the magazine, and I need the issues of Vol. 1 to do this. If you have copies available, I would appreciate your sending them to me, and I would be glad to pay any charges that might be involved.

George H. Tweney
Seattle, WA

• *The Nov./Dec. 1970 issue of MONTANA OUTDOORS was the first issue published under our new color format, and so it was Vol. 1, No. 1. Our next issue, Jan./Feb. 1971, began a new volume year, and so it was Vol. 2, No. 1. Unfortunately, we must apologize for not printing enough copies of Vol. 1, No. 1 to satisfy the demand. We are unable to fill requests for it.*

GAME MEAT? UGH!

As for "The Merits Of Meat" by Louise Fenner (May/June issue)—Give me a little more fat and fewer proteins in a piece of meat I can enjoy while I'm taking on nourishment.

Years ago I had my fill of tough, stringy, high-smelling, and yes — very costly game meat, meat I felt compelled to eat after dragging it home.

I'll choose mine over the counter and save money doing so.

Glenn (G.W.) Frisbie
Troy, MT

(more letters page 8)

mandate to manage

by craig whitney

THE greatest crisis facing mankind today is overpopulation and the related misuse of our environment. So what else is new? Quite a few concerned individuals have been shouting this from the rooftops for some years now. It is a well-accepted fact, even though precious little is being done about it.

Then why is it so difficult to see that this same crisis affects our Montana deer herds? The principles of population dynamics apply equally to mankind and to deerkind.

Would anyone disbelieve that overpopulation in India, for instance, is responsible for mass malnutrition and high infant mortality, and that simple human biomass has outstripped the soil's ability to produce adequate food supplies? Then why the inability to see this same syndrome in Montana deer herds? We quibble over one-deer or two-deer seasons and split hairs over adding or subtracting a week to the general deer season. This futile exercise goes on year after year. Meanwhile, the pertinent facts are often ignored—that winter starvation and pre-natal (and post-natal) mortality result in more deer deaths than the hunter harvest on many critical deer ranges. The diagnosis is malnutrition, and the cause is overpopulation.

How about an example to illustrate our point? We could go to any corner of Montana to find overpopulation, overused deer ranges and resulting malnutrition. But let's pick hunting district 54, or the South Little Belt Mountains, which offers an interesting contrast in deer numbers and herd nutrition.

In the western sector of this district are signs reading, **"Warning!** This deer range is in a progressively deteriorating condition. Prime deer forage is depleted and winter herd nutrition is critical. **Condition Red."** In the eastern portion of this same hunting district are other signs reading, **"Caution!** This deer range is recovering from an overused condition. Prime deer forage expanding. **Condition Green."**

Now before you go hurrying out to see these signs, let me explain that the language may be difficult to read. A game biologist can read them because he has studied nature's language and knows how to interpret and integrate information that may be puzzling to many people. Let's examine some of the ways these signs were interpreted in the South Little Belts.

Fish and Game Biologist John Cada was curious about the South Little Belt deer and expanded a management study to investigate. The western or Spring Creek sector of district 54 was known to have winter deer mortality as evidenced by carcasses dotting the area at spring green-up. The eastern sector, or Robert's Creek, showed no such evidence. The distance separating these two areas was found to be about 30 miles. Both sectors were under the same harvest system of two deer, so why the difference?

Cada conducted careful range investigations and found striking differences in types and availability of winter forage between the two areas. In the Robert's Creek or eastern sector where there was low deer mortality, both common juniper and horizontal juniper were abundant. Both are prime winter forage, capable of bringing deer through winter's harshness in good shape. Closer examination showed that the common juniper plants were branching out from a badly "clubbed" condition of past years' use. This species had received more foraging pressure because of its higher growth form and availability during heavy snows. Cada also found "backup" food supplies such as kinickinick, snowberry and oregon grape. All factors pointed to a quality and variety of deer foods which were being maintained or improved under the existing winter deer population.

Not so with the high-mortality Spring Creek sector on the district's western side. Ground surveys turned up mostly scattered amounts of rubber rabbitbush and yellow currant. Although these are considered of only moderate value as forage, they showed heavy use by deer. Their severely hedged or "clubbed" condition, plus relative scarcity, provided only minimum forage during early winter.

A check of U. S. Forest Service range records showed that redstem ceanothus and common juniper were formerly present. All that remained of these highly preferred deer foods were dead plant remains. Further observations showed heavy winter use of ponderosa pine to the point that smaller trees were being killed. Cada knew only too well that pine is a starvation diet for deer and its dominant use signals a winter range crisis. Rocky Mountain juniper and limber pine, equally marginal deer forage, were also utilized by the Spring Creek herd.

EDITOR'S NOTE—Craig A. Whitney, District Information Officer in Miles City, collaborated with department Game Management Biologist John Cada in the field work and the writing of this article. Whitney, 34, is himself a former Game Management Biologist. Prior to joining the department, he worked as a medical research biologist at the University of Miami Medical School and then went on to obtain a Master of Science degree in wildlife biology from the University of Michigan, Ann Arbor, in 1964. He received a Bachelor of Science degree in zoology from Florida State University, Tallahassee, in 1960.

Mule deer living in a good, productive habitat such as this have a better chance to survive the critical winter months. An adequate harvest by hunters can keep deer numbers down and, in turn, keep the range in optimum condition.

(above) Malnutrition and starvation mean a slow, lingering death—a waste that could be avoided by proper game harvests. (Spring Creek sector) (F&G photo by John Cada)

(below) Common Juniper, a preferred deer food, was once abundant in the Spring Creek sector. Now only dead plants remain. (F&G photo by John Cada)

(right) Ponderosa pine is a starvation diet for deer. Its use means a shortage of winter range food supplies. (Spring Creek sector) (F&G photo by John Cada)

(below) The "clubbed" condition of Rocky Mountain Juniper comes from overuse and signals a winter range crisis. (Spring Creek sector) (F&G photo by John Cada)

(below) Productive winter ranges produce healthy deer herds.

manage...

As a final check to substantiate range surveys, Cada selectively harvested a small number of deer throughout the district. Deer were taken during the critical winter months and carefully examined for stomach contents, general body condition and pregnancy in female specimens. He found that deer wintering in the Spring Creek portion depended on tree species (e.g. ponderosa pine) for approximately 50 per cent of their diet. The remaining portion of their diet consisted of relatively non-nutritious low-growing forbs which were exposed on windbared ridges.

Evidence of such a debilitating winter diet was not difficult to find. Cada observed by late winter that individual animals in the Spring Creek sector were in such a weakened condition as to appear "tame" when approached. Malnutrition and starvation were common for the more vulnerable fawns and older animals, but fawns were particularly susceptible.

The extreme vulnerability of fawns was brought to light by doe-fawn records taken during the winter of 1970. Repeated observations in the Spring Creek sector in January revealed a ratio of **60 fawns per 100 does.** By April of that same winter, however, this ratio had dropped sharply to **30 fawns per 100 does. Put another way, during the most critical winter period, 50 per cent of the wintering fawns**

were lost in the Spring Creek sector.

In contrast, Cada observed that the January ratio for the Robert's Creek sector was **80 fawns per 100 does.** Comparable observations taken in April gave the very same ratio. Winter fawn mortality was judged negligible here because of the range forage capacity to absorb the fawns.

Winter range starvation losses are staggering enough, but what about pre-natal and post-natal mortality? Pregnant does which are subjected to winter range malnutrition often naturally resorb their tiny fetuses. Fawns that are born from malnourished does may be born dead or be too weak to survive. The loss to deer herd potential can only be guessed. Every healthy, mature doe is technically capable of producing twin fawns. With resorption of just one fetus or the stillbirth of one twin, the birth potential is lowered by 50 per cent.

The explanation for the differences between the Spring Creek and Robert's Creek sectors is not difficult. **The balance between the Robert's Creek deer herd and its winter range food supplies has resulted from adequate hunter harvest.** Hunters have been able to traverse the more open terrain, using the many access roads, to get their deer. Coupled with an either-sex, two-deer season, deer harvests have been sufficient to keep the population under control. Range recovery has been possible to the extent that winter forage has increased both in quantity and quality.

In spite of the same two-deer season in the Spring Creek sector, however, the harvest has been lacking. The remoteness and lack of hunter enthusiasm have provided too great a security for the deer herd. Winter conditions have seldom forced deer out to the winter range during hunting season where they could be harvested. The result has been a population well in excess of winter forage supplies. Range deterioration and progressive loss of all but marginal food supplies have resulted.

Unless sufficient hunter harvests can be reached in such cases, nature becomes the grim reaper by starvation, as in the case of Spring Creek. Re-establishment of a healthy deer herd must await the slow recovery of winter range, possibly a matter of several decades or longer.

It is questionable just how long we can allow such a waste to continue. Deer and other wildlife constitute a resource of immeasurable value to Montana —particularly because they are a renewable resource each year. Yet wildlife is being threatened from all sides by accelerated land use and a deteriorating environment that gives no quarter.

It is therefore vital that we come to grips with the core issue of managing our wildlife resources. Season length and bag limit have no intrinsic value except in relation to adequate game harvests. **Game harvests become meaningless in the broadest sense unless the vital winter range is protected from deterioration.**

Game management must receive the support to flexibly vary season harvests according to the dictates of deer range requirements. Broad and rigid game regulations serve only man's interest and not the wildlife resource. There is no alternative but to manage our wildlife more intensively and flexibly.

The public has always wanted modern scientific resource management. This is a public mandate—a mandate to manage!

Records kept during John Cada's study pointed out the extreme vulnerability of fawns under depleted range conditions. In the Spring Creek sector, 50 per cent of the fawns failed to survive the critical winter months. (F&G photo by Hector LaCasse)

A few TALL requests

EDITOR'S NOTE—Throughout the years, the department has received thousands upon thousands of requests. After passing through several mail baskets, they usually end up in the Information and Education offices for reply.

The letters are answered with prepared literature or personally by I&E personnel. Some of the replies take longer than we like, but sooner or later almost everyone receives a response.

Although we hate to admit it, some requests are very difficult to meet. These letters are prime examples, and they appear here exactly as they came to us.

We would like to stress that the department appreciates the sincerity of these and all other letters it receives.

Dear Sirs,

I'm in a fourth grade class. We are learning about conservation. I would like to know what you're conserving if you are conserving anything. How is it coming along?

Sincerely Yours
John Tobin
Plainview, New York

Dear Sir,

I would like some information about your state. I would like to know about the Glaciers, Parks, Forests and wildlife. Then I would like to know about other interesting things that happened the last 100 years.

signed, Jeffrey D. Dodge
Dorchester, Wisconsin

Please send me the Education Division; Montana Fish & Game Department. I'm interested. Send to: Miss Kristi Herman, Denton, Montana.

Thank you.
Sincerely yours.
Kristi Herman

Dear Sirs:

Please send me free booklets and maps about your states Wildlife and if you could please send me a free writing pen.

Thank you
Brad Brophy

Dear Person,

I am doing a school project on Phesants and I would like some imfermaction on hen and mail phesant hunting and other kind of stuff about these birds.

Sincerely yours,
Harold Nutter

Dear Governor,

I am a boy that is in fourth grade. I live at Anoka, Minn. I would like to know if it is possible for someone to buy two buffalo, a male and a female from a park or somewhere there are buffalo. If this is possible, could you find out how much they cost? I read in a book that their were millions of buffalo in 1859 grazing in herds around and in your state. And in the year 1889 there were only 550 left. So I got to thinking what I could do. When I grow up I want to raise buffalo and sell them to parks. I think I have a suitable place for them, my dad is a farmer and has 750 acres. With 3 big hay fields which he could easily replant into timothy (that's a kind of grass) timothy is much like the grass the buffalo eat on the plains. We could have a fence put around to keep them in and in the winter we have hay we could feed them. I think, I would like to start right away. (by the way my dad would be glad to help me.) We have a swamp in which they could drink and cool off. I hope you will reply and try to find out the answers and give me my information.

Yours truly,
Delmar Dean
Anoka, Minnesota

Gentleman,

Would like to know more about hunting, fishing, & camping. If their are any places you can or can't hunt.

Thank you
Jean Walker
(MISS)

Dear State Capitol,

My name is Gary Smith. I am ten years old. I would like you to send me som National forests park lake maps. Would you send me something about Big foot or a map how tall he is?

Sincerely yours,
Gary Smith
Tonganoxi, Kansas

Dear Sirs,

I am 11 years old and in the fifth grade. I would like to give a report on Montana. Would you please send me booklets, paper, or anything that tells information on Montana. Thank you very very much.

Sincerely,
Maridean Neis
Fountain, Minnesota

P.S. Today I am 11 years old. Today is the 12th of November.

To whom this may concern,

My brother's birthday was on 12/8/67 and I forget to get him something. He's interested in fishing and in wildlife and I thought that it would be thoughtful to give him something on fishing & game. I'd like a book or two that is free, 'cause I'm low on hard cash and I don't want to charge it. This is a list of animals I'd like you to include:

1. Beavers
2. Mt. Lion
3. Jack Rabbits
4. Cottontail
5. Bobcats
6. Gophers
7. Sage Grouse
8. Red tail hawk
9. Bluegills
10. Catfish
11. Carps
12. Basses
13. Golden Trout
14. Rainbows
15. Cutthroat Trout

I'm in no real hurry so take your time and please include some cardboard or paper saying: Sorry I'M late but here's my present to you (Richard). Happy Birthday ! ! !

Ivan M. Bird Jr.
San Francisco, California
Thank you Very, Very Much

dear F&G

(continued from page 1)

Falcon Lovers Strike Again

EDITOR'S NOTE: When G. W. Frisbee of Troy, Mont., launched a verbal assault on the peregrine falcon (dear F&G, May/June issue), readers from Montana, California and Canada rushed to the bird's defense. Four replies were printed in the last issue of M.O., and three more appear here.

In response to the letter written by G. W. Frisbie (Who Needs the Peregrine?), we would like to challenge several of his statements.

First of all, it appears that even the most basic rules of conservation have been overlooked by Mr. Frisbie. Although the food items of the peregrine may be what he mentioned, the peregrine, like most predatory animals, tends to single out the weaker individuals as its prey, and also those prey species which have reached peak populations. Thus the fitter individuals survive and this helps secure a stronger overall population. Instead of " . . . trading any of our fine game birds for the falcon . . .," we are, perhaps, increasing the total yield through the falcon's efforts in reducing the sick and unfit birds which might themselves wipe out an entire population with disease.

Falcons and all other predators play the important role in nature of keeping the numbers of species in check with their environment.

Finally in closing, Mr. Frisbie states, "There you have it. The peregrine doesn't even earn his keep by consuming a few rodent pests." If we are to judge the value of a species by this criterion, then perhaps Mr. Frisbie might do well to check on the diet of the Bald Eagle, our national emblem. Most authorities hold that fish and crippled game birds make up most of its diet, with rodents and small mammals playing a lesser role.

In closing, the words of the Canadian ornithologist P. A. Taverner (1926) concerning the peregrine falcon might be pertinent. He says, "There should be enough game in the country to support so picturesque a character without arousing the jealousy of other hunters!"

Pete Widener, Jr.
Gerald R. Geiger
Missoula, MT

LET THE PEREGRINE ALONE

Why must man judge the value of a species purely on the immediate value of that species to himself? Why should man decide whether a species is to survive or become extinct?

An answer: man is part of many ecosystems and because he is a dominant part of those systems, his contribution to these ecosystems will affect other species. That effect may very well cause some species to become extinct. It is all very natural and it has happened before. Nor is man the only species that has caused other species to vacate the earth. But why must man be so self-centered, so dictatorial, about which species survive and which species do not. Why so arbitrary? Can't natural selection make a wiser decision?

Why should the decision whether the peregrine falcon survives or not be based on man's preferences for gulls, waterfowl, doves and larks. Why is the lark superior to the peregrine falcon? Because of its color, its song? Perhaps it is just as enjoyable to watch a peregrine falcon dive and swoop as to listen to the lark.

Are we so blind that environmental issues must instantly benefit man; that every inconvenience to man must be destroyed? Might a decision "favoring man" be contrary to man's best interest when the roles of all species in the ecosystems are understood?

To paraphrase John Muir; before we tug at a single thing in nature perhaps we should know how it attaches to the rest of the world.

The real answer to the question, who needs the peregrine falcon or any other species for that matter, is implied by the following statement—a livable environment for wildlife is a quality environment for man. Only I am inclined to change the order around: a quality environment for wildlife is a livable environment for man.

Paul T. Sawyer, Ph.D.
Department of
Biological Sciences,
Montana College of
Mineral Sciences and
Technology,
Butte, MT

WHO NEEDS MAN?

He pollutes—the air (getting pretty hard to breathe, huh!); the waters (eaten any swordfish lately? or ever heard of an oil spill?)

He strips the lands—careless and intentional forest fires; clears "wastelands" (e v e n though fish and wildlife utilize these) for his own selfish use.

He is making birds and animals extinct by useless killing and pesticides (DDT sound familiar?).

And someone is worrying about a peregrine eating a seagull. WOW!

The truth is: The peregrine takes the weak, the crippled, the sick of a species. In the end, it helps strengthen a breed.

I am not a nut on birds. I just think man should take a look at himself—and really, it seems like we are taking a little too much into our hands.

Carol Morgan
Long Beach, CA

SHUTTING OFF A RIVER

The Jocko River Valley lies north of Missoula, Mont., at the base of the Mission Mountains. In those few fields where the farmers have not turned the ground into hay mounds, wild flowers are abundant and pines and firs grow tall; down by the river cottonwoods are everywhere . . . but all is not perfect in the Jocko River Valley. Nature is not allowed to complete her cycle because for approximately three months every year the river is turned off to meet the irrigation needs of farmers in the valley. This is done without regard for non-farming property owners.

Both open ditch and sprinkler systems of irrigation are used in the Jocko Valley. The sprinkler system uses a small amount of water while the open ditch system necessitates taking more water from the river than is necessary for watering the fields. The open ditch system is cheaper than the sprinkler which probably accounts for its popularity, but the open ditch necessitates turning off the river. The water that is taken out at the diversion dam is not used completely and is returned to the river farther down.

Why this waste? Why take the water out in the first place? The ecology of the river is destroyed: fish die, aquatic plants die, Nature's cycle is not completed and once again, man—the greediest of all Nature's creations—destroys.

We are not asking that the river not be used for irrigation—man must eat to live. But we are asking that the river be kept running, in a small way, so that nature can continue its course. We non-farming members also have a right to water. We want water in nature's river bed, not in a man-made irrigation ditch, the proceeds of which provide man with unneeded and wasteful items, e.g. three TVs per family, three cars per family, instant plastic food and ulcers.

It is not only the Jocko River Valley that suffers from the monopolization of waters by farmers. Many other Montana rivers are shut off for this same purpose.

Would it not be better for all concerned if the farmer were compelled to change to the sprinkler system — the federal government at present subsidizes 30 per cent to 50 per cent of the cost. Perhaps our antiquated state laws must be changed . . . but something must be done. Can you help?

Anthony King Hoyt
Jyl Kathleen Hoyt
Arlee, MT

AUDUBON SOCIETY CONGRATULATES M.O.

I have just seen two recent issues of MONTANA OUTDOORS. You are to be congratulated. The magazine is hard-hitting and informative, and a great credit to the State of Montana.

We were greatly pleased to see articles on pesticides, strip mining, the relationship between sagebrush and wildlife, and other environmental subjects. These are matters which sometimes require difficult choices. You are, therefore, doing the people of Montana a real service by helping them to understand what abuse of the environment can do to their state.

Please pass on our compliments to Director Frank Dunkle for the attractive and informative magazine. It is a real public service.

Charles H. Callison
Executive Vice President
National Audubon Society
New York, NY

MANUSCRIPTS WELCOME

For a number of years I have wondered if your department publishes a monthly magazine similar to Wyoming Wildlife? As a hobby I have written a few short essays on fishing experiences in Montana, as it was my boyhood home. I was curious to know if you accepted material for consideration by your editorial staff. If you do consider writing done by others than your own group, I should like to submit a short essay for your consideration. This one concerns the Bearpaw Mountains. I could provide some interesting old photographs taken about 1915.

I presently am professor of Geology at the University of Wyoming, where I have been located for over 20 years.

Thanking you for your consideration in this matter.

D. L. Blackstone
Laramie, WY

• *MONTANA OUTDOORS welcomes manuscripts, photos and illustrations from our readers with the stipulation that they will be published at the discretion of the editor. At the present time we have no provision for payment, so this material must be on a contribution basis. Please send us your essay for consideration.*

You KNOW you're a sportsman when...

by bill schneider

(illustrated by vern craig)

LIKE many terms, the word "sportsman" means different things to different people. However, you can be absolutely sure that you qualify as a genuine, dyed-in-the-wool sportsman when you . . .

. . . find it almost impossible to get out of bed in order to make it to work at 8 a.m., but on the first day of hunting season, you bounce out of the sack at 3 a.m. and hurry to your favorite hunting area an hour before first light.

. . . argue with your wife about the money she plans to spend on a dishwasher because you need some extra cash for a new double-tapered fly line and a better scope for your extra rifle.

. . . stop blaming the lack of game on too many hunters and not enough game farms and realize that the scarcity of good wildlife habitat causes the decline.

. . . automatically ask before you enter private land whether it's posted or not.

. . . can contribute five flies in a row to overhanging trees without uttering one cuss word.

. . . refuse to hunt on land where domestic livestock is at large.

. . . can make a fish grow 12 inches in three sentences without anyone catching on.

. . . completely swear off littering.

. . . happily spend six hours fishing without a bite and then arrive home and refuse to wait more than five minutes for your dinner.

. . . carry or drag your downed big game animal out instead of trying to get your vehicle in to get it.

. . . realize that the future of public hunting on private land hinges on the landowner's willingness to allow it.

. . . come back from a day in the field empty-handed, sunburned, thorn-scratched, mosquito-bitten and in a state of total exhaustion, and then go on and on about how much fun you had.

. . . know that your Fish and Game Department is funded by its own license sales and federal matching funds and not by taxes.

. . . join a sportsman's organization to support sound environmental legislation and discourage bills that could endanger our natural resources.

. . . insist that children wear life preservers whenever they are in a boat.

. . . get an invitation to visit the church you joined five years ago.

The Other Half

. . . A Woman's Look at Conservation by Louise Fenner

THE CYCLE OF THE DDT

The man sprays the plants,
Then the rains come down,
And drifts the DDT into the streams,
And the fish get poisoned,
Then the birds come along,
And they eat the fish,
And the fish lay their eggs,
And the fish babies grow up,
Then the man eats the fish,
Then the DDT eats the man,
And that's the cycle of the DDT.

Megan Lurie, age 9
Bala Cynwyd, PA
Conservation News

DOWN WITH LITTERBUGS

Keep America Beautiful, Inc., a national public service organization that is conducting a war against litter, has an interesting story to tell. Early this year a 10-year-old South Carolina boy helped catch a robber by picking up his litter.

The boy noticed a passing motorist toss paper out of his window, so he wrote down the license number and picked up the litter. His eye caught the fragment of a check from a local department store that had been robbed earlier in the day. He took it to the police, who used the fragment and the car license number to nab the robber. It turned out that the suspect was wanted in three other holdups as well.

Here's a bit of information that should interest our female readers: **Men litter nearly twice as much as women.** Keep America Beautiful revealed this fact recently, but it stressed that no matter who litters the most, **nobody should be littering at all.**

Litterbugs make quite a mess. Cleanup in public areas now costs U. S. taxpayers about $500 million annually. If you add the cost of litter removal from private property, the cleanup bill approaches $1 BILLION EVERY YEAR.

Litter is not only ugly—it is dangerous. Consider what a broken bottle can do to a swimmer or fisherman who steps on it. Litter makes an ideal breeding ground for disease-carrying insects and rodents, and it can turn a highway or waterway into an obstacle course. Litter-fed fires kill an estimated 130 persons annually, and every 12 minutes a home is damaged or destroyed by a fire that starts in trash.

Most people do not connect the litter problem with their own litter habits, Keep America Beautiful says. Yet people drop 16,000 pieces of trash ON EACH MILE of primary highway every year, and only one-half of the nation's cars even bother to carry a litterbag. The worst offenders are adults between the ages of 21-35, while people in the 35-49 age bracket come in second.

How can you help clean up this mess?

1. Keep your own home and property litter free.
2. Carry and use a litterbag in your car and boat.
3. Encourage your community to furnish sufficient receptacles for street trash.
4. If there is no litter-prevention program in your area—start one.

Keep America Beautiful, Inc., offers additional information and materials. Write to: Keep America Beautiful, Inc., 99 Park Avenue, New York, NY 10016.

DARK OR LIGHT?

Did you ever wonder why some game birds have dark breast meat and others light?

A *Scientific American* article on bird flight points out that light-breasted game birds such as pheasant, ruffed grouse and quail fly only short distances with quick bursts of energy. They don't need a large number of blood capillaries to provide oxygen to breast muscles.

On the other hand, game birds such as ducks, geese and doves fly long distances on their yearly migrations and need a much larger supply of blood to the breast muscles. The greater the amount of blood in the meat, the darker the color.

SOMETHING FOR THE COOK

"I saw your request for recipes (May/June issue) using products from Montana. As there are millions of wild roses growing in Montana, some of the readers of MONTANA OUTDOORS might like to use some of them. I am enclosing my recipe for rose hip jelly.

ROSE HIP JELLY

Take one pint of cleaned rose hips and the peelings from two tart apples; cover with water and cook until tender. Crush and let drip thru a jelly bag. Measure 2 cups of juice and add 2 cups of sugar; bring to boiling point. Add ½ cup of lemon juice and boil briskly for 12 to 15 minutes. Test for jelly after 10 minutes, as the liquid toughens if boiled too long. Pour into sterilized jelly glasses and seal with paraffin."

Mrs. Clarence Kinney
Missoula, MT

EDITOR'S NOTE: Rose hips are the seed pods of roses. They should be gathered in late summer or early fall, after the flowers have lost their petals.

Sourdough Savvy

STANDING at the "water hole" at the local Elks Club one "stag" night, I renewed acquaintances with Lou Weeler, an old timer and rancher from Big Porcupine Creek north of Forsyth, Mont.

We got to reminiscing and I asked Lou if he still kept his sourdough crock going and we had a lively discussion.

A couple of acquaintances overheard us and later asked if I used this ancient form of making hotcakes.

"You bet," was my reply, and I told them there was nothing better. To be convinced, they had to sample my "grub pile" one Sunday morning and now they are believers.

Sourdough hotcakes and breads are simple to make. There are five basic ingredients—the starter, flour, salt, sugar and baking soda.

Sourdough starters have been handed down in families for years. This type of cooking was part of the frontier and homestead era. If you can't obtain a starter from a friend or buy packaged starter, you can make your own.

Here are a couple of recipes for starter:

1. Two cups flour; 2 cups warm water; 1 package dry yeast. Combine ingredients and mix well; place in a warm place overnight and let it sour well. Place 1 cup in pint jar with tight lid and store in refrigerator to save for another time; use the remaining to make batter.

2. Mix 2 cups flour, 2 tablespoons sugar and 1 tablespoon salt in sufficient water to make a creamy batter. Stir in 1 tablespoon vinegar and set in a warm place to sour. Leave it several days to work. If a clear liquid forms on top, pour it off and add more flour and water before using it.

Place the starter in a pint mason jar or crock and keep it in the refrigerator when not being used. It can be frozen during long periods of inactivity. A starter left unattended will form so much acid it will destroy itself. Never keep a starter in a metal container. Glass, plastic or crockware is best.

Now for making those tantalizing hotcakes that will stick to the ribs, are as tender as angel food cake and will disappear like gold.

Story by Bill Maloit

Photos by Bob Carroll

HOTCAKES

Place ½ cup starter in mixing crock, add 2 cups flour and 2 cups milk or water and let stand overnight in a warm place. In the morning, batter will have gained one-half again in bulk and will be covered with air bubbles.

Set aside ½ cup starter to save for next time. To the remaining starter add 1 teaspoon salt, 1 tablespoon sugar, 1 egg and 3 tablespoons melted shortening. Blend well and test the batter to see if it runs easily off the spoon.

The last and most important step is to add the baking soda. To the batter add 1 teaspoon baking soda and blend it in, folding the batter gently to mix the soda well. The batter should foam up like a meringue.

The griddle should be hot when the batter is ready. Spoon the batter onto the griddle and when the cakes are covered with bubbles, flip them over. Test by gently touching with the spatula—if the cakes spring up, serve them immediately.

Sourdough cakes should be made one spoonful at a time. A cake about four inches across is just right. Covered with butter and chokecherry syrup, they will make a breakfast you'll look forward to.

EDITOR'S NOTE—Bill Maloit, 48, has served 23 years with the Fish and Game Department. Now Special Services Coordinator in Miles City, Maloit has also been a field biologist, game warden, warden supervisor and district supervisor. He joined the department after graduating from the University of Montana in 1948 with a Bachelor of Science degree in wildlife technology.

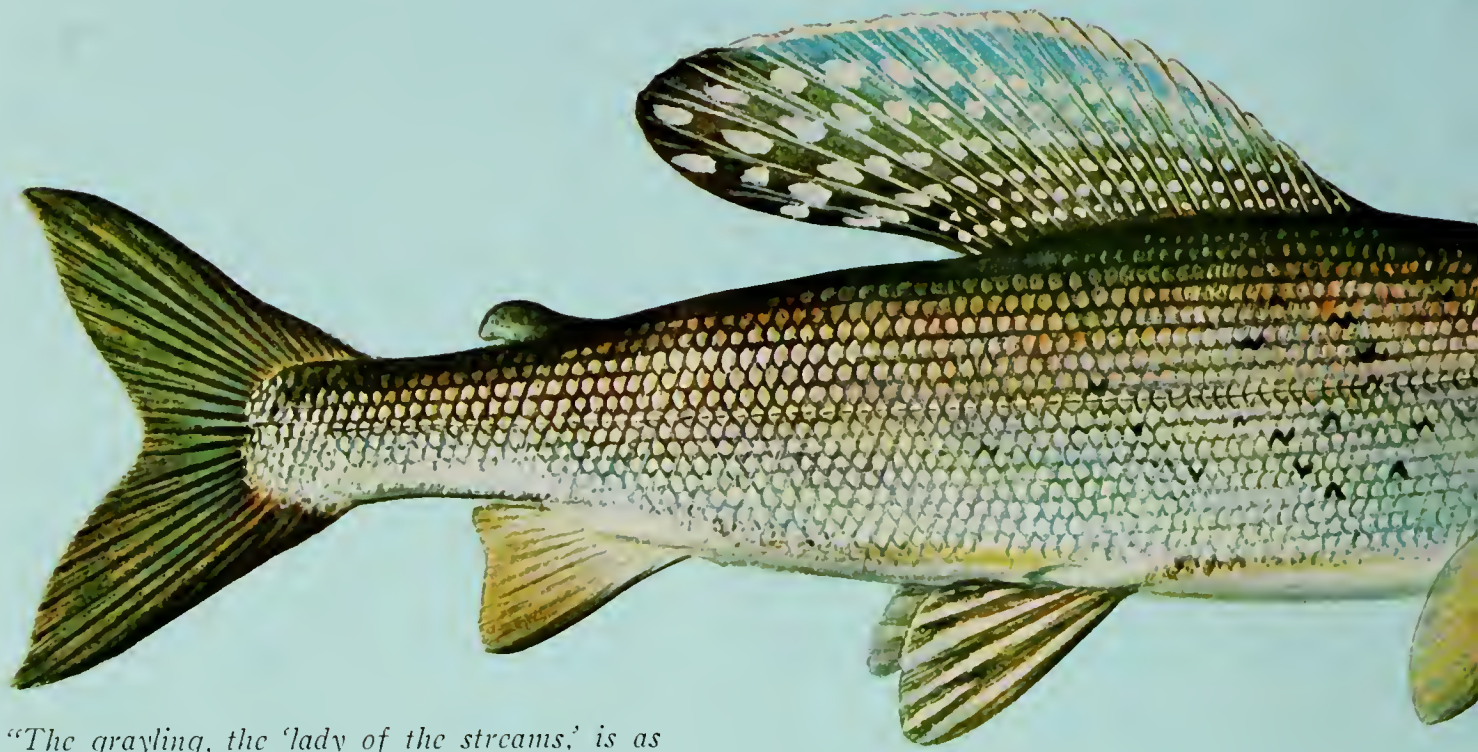
BISCUITS

The old timers who worked from sun to sun liked sourdough because they could prepare their batter for hotcakes at night, use it in the morning and make biscuits from the remainder for dinner that evening. Here is a biscuit recipe I can guarantee to be good. The biscuits have a texture like raised bread.

Mix ½ cup starter, 1 cup milk, and 1 cup flour in a crock or bowl. Cover and let stand during the day in a warm place. At dinner time drop this dough into 1 cup flour on the bread board. Combine 1 tablespoon sugar, ¾ teaspoon salt, 1 teaspoon baking powder, ½ teaspoon soda and another ½ cup flour. Now, knead the dry ingredients into the soft dough to the correct consistency. Roll out to ½ inch thickness and cut with cutter, place in greased pan or dutch oven and set in a warm place to rise for about ½ hour. Bake at 375° for 30-35 minutes, until golden brown.

I hope you enjoy sourdough cooking — remember, each time you use the starter, add flour and water to bring your starter to the original level.

Good luck and good eating.



"The grayling, the 'lady of the streams,' is as trim and graceful, and withal as beautiful as a damsel dressed for her first ball. Her lovely iridescent colors and tall gaily-decorated dorsal fin, which might be compared to a gracefully waving plume, must be seen fresh from the water to be properly appreciated."

James A. Henshall, M.D.
First Superintendent
Bozeman National Fish Hatchery

by George D. Holton

IN 1805, when the Lewis and Clark Expedition was exploring Montana, Captain Meriwether Lewis included in his journal for Thursday, August 22nd (direct quote):

> late in the evening I made the men form a bush drag, and with it in about 2 hours they caught 528 very good fish, most of them large trout. among them I now for the first time saw ten or a douzen of a white speceis of trout. they are of a silvery colour except on the back and head, where they are of a bluish cast. the scales are much larger than the speckled trout, but in their form position of their fins teeth mouth &c they are precisely like them. they are not generally quite as large but equally well flavored.

They were fishing in the upper reaches of Beaverhead River in the vicinity of what is now Clark Canyon Reservoir, and it has since been determined that the "white speceis of trout" was grayling.

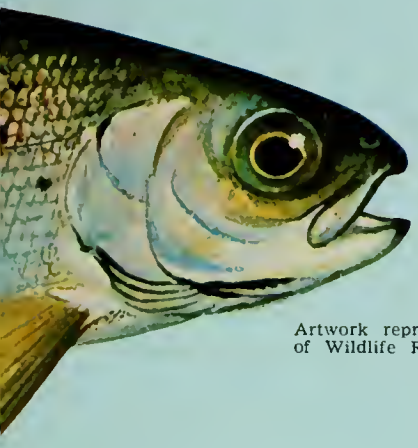
CLASSIFICATION

Captain Lewis was an accurate observer when he called grayling a species of trout. It has since been classified a member of the trout family, which includes grayling, trout, salmon and whitefish. All members of the family are similar in general body shape and all have an adipose fin (small, fleshy fin on the back just ahead of the tail). Grayling are readily distinguished by a large, colorful dorsal fin.

The grayling is a freshwater fish of cold or Arctic regions whose range almost encircles the North Pole. There are four species: one European, two Asiatic and another both Asiatic and North American. The last-named is the Arctic grayling, which is widely distributed across Siberia, Alaska and Canada, and is found in diminishing numbers in Montana. Its members were once abundant in

Montana Grayling:

The Lady of the Streams



Artwork reprinted courtesy of the Utah Division of Wildlife Resources—Maynard Reece, artist.

a number of Michigan streams but became extinct in Michigan in the 1930's.

As shown on the map (page 20), the Montana and Michigan populations were 500 and 800 miles respectively south of the main grayling range and widely separated from each other. During the last Ice Age, when an ice sheet covered much of northern North America (it extended at least as far south as the Missouri River in Montana), Montana and Michigan grayling evidently found separate refuges south of the ice sheet. Alaskan and Canadian grayling survived in a northern refuge.

Montana grayling, Michigan grayling and the northern grayling were once considered separate species. Authorities now classify all North American grayling as one species: Arctic grayling. As a result of their long separation from the main body of Arctic grayling, the grayling in Montana probably differ sufficiently to be called a separate race (a subdivision of species).

DISTRIBUTION

Early records for Montana indicate that grayling were widespread and locally numerous in the Missouri River drainage above Great Falls. They were found particularly in Smith River and its tributaries, in Sun River, and in Jefferson, Gallatin and Madison Rivers and their tributaries. In Yellowstone National Park they occurred naturally in Gallatin and Madison Rivers and in some of their tributaries.

The only substantial remnant of these original populations is in waters on the Red Rock Lakes National Wildlife Refuge in southwestern Montana. Refuge personnel estimate that there are roughly 6,000 adult grayling in streams and ponds on the refuge. Grayling are also found in the upper Big Hole River, in half a dozen tributaries and in at least nine lakes in the area. Some of these populations may be remnants; however, these waters have been heavily planted with grayling in the past. A few grayling are occasionally taken in the Madison River.

Reproducing grayling populations are known to exist in 39 lakes and 14 streams in western Montana on both sides of the Continental Divide. This includes one lake and one river in Glacier National Park. Outside Montana, grayling are found in several waters in Yellowstone National Park. They have been introduced into lakes in other states including Wyoming, Arizona, Utah, Washington, Idaho, Colorado and California.

HABITAT AND FOOD

Grayling do well in cool lakes which have tributary streams suitable for spawning. However, they are mainly stream-dwelling fish and their early distribution in Montana was predominantly in streams. They prefer spring-fed streams with clear water and comparatively stable flows and temperatures, and streams that are intermediate between cascading and sluggish. Preferred summer water temperatures range from 50° to 65° F. Unlike many members of the trout family, grayling are comparatively resistant to winterkill from low levels of dissolved oxygen.

Grayling are often found in waters where aquatic plants are abundant, so much so that some early observers thought they spawned on plants.

The grayling's diet consists mainly of aquatic insects and other organisms common to streams. Terrestrial insects which fall into the water are also important. Fish are only a small part of their diet. They are ravenous feeders and are readily caught on artificial flies and other lures.

In the early days, two-pound grayling were fairly common in prime Montana waters. An occasional grayling this size is still reported; however, the average size today is .4 to .9 pound and

10 to 14 inches. This small size is at least partly due to the grayling's being restricted to less productive habitats. Overpopulation restricts their size in some waters.

SPAWNING

Montana grayling spawn in the spring when water temperatures reach 40° to 50° F. Generally they migrate upstream to suitable spawning areas. They have also been observed spawning, or at least attempting to spawn, in the outlets or along the shorelines of lakes.

The spawning habits of grayling are similar to those of trout. However, they do not build redds (nests) as trout do, but spawn on a stream bottom that may be sand, gravel or even rubble. Their adhesive eggs, which are much smaller than trout eggs, adhere to whatever they touch. The fry are very small and require tiny food.

STATUS

The Montana form of the Arctic grayling is listed as rare in the "Red Book" of the Bureau of Sport Fisheries and Wildlife, the "bible" on rare and endangered species. As indicated earlier, Montana grayling have been separated by 500 miles from the main body of Arctic grayling since the last Ice Age. They are a relict population—a remnant, isolated from its principal range.

Relict populations generally have inflexible habitat requirements and, as a result of long isolation, lack the genetic diversity to adapt to natural changes that occur. Changes in environment are inevitable and relict populations such as Montana grayling are usually eradicated in a matter of time. On the other hand, the main body of Arctic grayling in Canada and Alaska appears to be thriving and conceivably could be extending its range where conditions are favorable. (Such changes are called range adjustments.)

A review of the grayling situation in Montana indicates they are not in immediate danger of extinction. At the same time, they are not as secure as might be desired. Reproducing populations are found in 39 lakes and 14 streams. However, they share three-fourths of these waters with competing trout species, and in many the grayling population is sparse.

Grayling are now more dispersed in Montana than they were historically because of introductions. However, their total number is greatly reduced. Most Montana populations are now in lakes, whereas formerly they were mainly in streams. There are few remnants of original populations. A complete list of grayling waters is available from the Montana Fish and Game Department.

Historic distribution of Arctic grayling in North America, including Montana and Yellowstone National Park.

Present distribution in Montana.

ARCTIC GRAYLING - MONTANA RACE

Classification: Class - Osteichthyes
Order - Clupeiformes
Family - Salmonidae
Genus - *Thymallus*
Status: Rare. Species - *arcticus*

Distinguishing Characteristics: (Colors are variable. Those described here are colors of grayling from Lake Agnes, Mont.) Large sail-like dorsal fin, brilliantly colored with iridescent spots of blue, green and orange-pink. Upper edge of dorsal orange-pink. Female usually has smaller, less colorful dorsal fin. Pelvic fins streaked with pink. Adipose fin present. Body has large scales, is olive-brown on back, purplish on sides, white on belly. Black spots concentrated on forward part of body.

Former Range: Missouri River Drainage above Great Falls, Mont.

Present Range: Latest records indicate 53 reproducing grayling populations in western Montana on both sides of Continental Divide. Thirty-nine of these are essentially lake populations and 14 are stream populations. This includes populations in Red Rock Lakes area and upper Big Hole Drainage (which were in original range) and one lake and one river in Glacier National Park. Many of these are sparse populations. Outside Montana they are found in several waters in Yellowstone National Park. They have been introduced into lakes in other states including Wyoming, Arizona, Utah, Washington, Idaho, Colorado and California.

Reasons for Decline: Combination of habitat deterioration, introduction of exotic trout and possibly overfishing.

Management Measures: Protect existing populations against habitat deterioration, introduction of competing species and overfishing. Improve existing habitat. Enlarge present grayling range by establishing them in suitable mountain lakes and other waters. Obtain information on requirements of grayling at various stages of life.

The male's dorsal fin is usually larger and more colorful than the female's (examples from Lake Agnes).

CAUSES OF DECLINE

Habitat changes caused by man and competition from introduced species seem to have been the main factors in the decline of the Montana grayling. Overfishing may also have contributed.

Man has accelerated environmental changes through the use of land and water for power generation, timber harvest, mining and agriculture. Spawning areas have been blocked and important grayling areas in streams have been inundated (flooded). Much tributary stream habitat has been lost through diversion for irrigation, and other streams have become muddied and warmed after being cleared of streambank vegetation. Changes by man, over a comparatively short period of years, have hastened the decline of Montana grayling.

Another major factor has been the introduction of new fish species into grayling waters. Arctic grayling have been associated with many different species of fish across their range, but with comparatively few different species in any one place. In Montana, they were associated mainly with cutthroat trout, mountain whitefish, longnose dace, longnose and mountain suckers, burbot and mottled sculpin.

However, when rainbow, brook or brown trout—not native Montanans—are introduced into grayling waters, grayling are usually (but not always) unable to compete. It may be that the intruders are better able to complete their life cycles in a habitat which has been disturbed or is otherwise less than optimum for grayling. Recently-hatched grayling fry are tiny, fragile and helpless compared with trout fry. They congregate so that predation by trout may be an important factor; or perhaps grayling fry simply lose out to small trout in the competition for food.

Montana's finest grayling stream—the Big Hole River between Wisdom and Wise River. (F&G photo by George Holton)

At Lake Agnes, one of Montana's best grayling lakes, researchers from the Montana Cooperative Fishery Unit are conducting a grayling study. They estimate that there are 25,000 to 30,000 adult grayling (9-13 inches) in the lake. Only grayling are found in this particular lake. (insert) Close-up of tributary in above photo showing grayling on spawning beds, spring, 1971. (F&G photos by George Holton)

Lady of the Streams . . .

Grayling are one of the easiest fish to catch. They travel in schools and are persistent feeders. Often when a person is catching and releasing fish, he can catch the same grayling again and again. It is believed that overfishing, in combination with other factors, may have contributed to the decline of Montana grayling. Early reports described grayling caught by boxes-full. Fishing could especially be a factor after the introduction of harder-to-catch species such as brown and rainbow trout. A higher percentage of the easier-caught grayling would be taken by fishermen, leaving the competing species to take over more food and space.

MANAGEMENT

Even without man's influence, Montana grayling were probably doomed. In time, natural changes in their restricted environment could have caused their extinction.

Although man until now has speeded their demise, he has the means to insure the existence of the Montana grayling indefinitely.

Unfortunately, not all fishermen recognize the value of the grayling as a sport fish. Some confuse grayling with whitefish or suckers because of the large scales. Others who recognize them do not appreciate them for the fine sport and food fish they are, but consider them coarse fish. There is little doubt that Montana fishermen as a whole prefer trout to grayling; but on the national level, grayling—one of the rarest North American game fish—is desirable as a trophy.

There are several tools available for perpetuating the Montana grayling.

1. **Existing populations should be protected**

against the introduction of competing species, habitat deterioration and overfishing.

2. Where **habitat improvement** can be accomplished, this should be done. For example, there may be places where it is feasible to remove beaver dams that are blocking grayling spawning streams. However, it would be unrealistic to undertake a large-scale program of stream rehabilitation in an effort to restore grayling to much of their former range in Montana. The program would be exorbitantly expensive and trout, as it was pointed out, are more desired by fishermen than grayling.

3. **Grayling can be propagated in hatcheries.** About 1900 this was started on a large scale at the Bozeman National Fish Hatchery. By 1907 this station had distributed 16 million fry and fingerlings. Grayling were first hatched on a production basis by the state in 1908.

Fry planting has its limitations. This is demonstrated by the fact that about 180 million were planted in Montana between 1915 and 1940, and yet this was the period when Montana grayling suffered their greatest decline. Nevertheless, because of fry introductions, more than 30 mountain lakes today contain self-sustaining populations.

It has been demonstrated in the West Gallatin River that if grayling are raised to six inches or longer before planting, they will provide fishing in spite of rainbow, brown and brook trout. Such planting would have to be continual if fishable populations were to be maintained. An artificial program such as this is not as desirable as a natural program for preserving grayling; and here again, the cost would be hard to justify.

4. A long-range approach to perpetuating Montana grayling, and one which has been followed for many years, is to **provide substitute habitat on a limited basis for the original habitat lost.** The new habitat, of course, has to include cool, clear water, adequate spawning streams and freedom from incompatible species in order to be suitable for grayling.

Fortunately, Montana, faced with the problem of maintaining her native grayling, is blessed with a number of mountain lakes that can fill this need. Although mountain lakes appear to have the best potential, consideration should be given to lakes at lower elevations and to streams.

The department does not anticipate a great rush to convert mountain lakes and other waters to grayling management. Nevertheless, it would be prudent to reenergize the program of extending the present range of Montana grayling. As opportunities arise, grayling should be introduced into suitable waters where there will be no conflict with other uses. This will give anglers an opportunity to catch this uncommon fish and at the same time will insure its perpetuation.

There is additional insurance that Montana grayling will survive. They have been established in lakes and streams in both Glacier and Yellowstone National Parks and they have been introduced into lakes in other states. Providing suitable habitat will go a long way toward perpetuating the Montana grayling.

5. To assure wise long-range management, **more facts about the requirements of the grayling at various stages of life are needed. Investigations should be made under a variety of habitat conditions.**

A study that will answer some of the questions is currently being conducted by the Montana Cooperative Fishery Unit at Lake Agnes near Melrose. In addition, the U.S. Forest Service is cooperating with the Montana Fish and Game Department in a grayling study on tributaries to Elk Lake near West Yellowstone.

Montana has named a state bird, a state flower and a state tree. Other states have named a state fish; Montana has not yet done so. The beautiful grayling, a unique Montana fish, is the number one candidate. May the legislature see fit to adopt it as the state fish. The "lady of the streams" deserves this recognition, which will enhance her chances of survival in Montana's waters.

EDITOR'S NOTE—George D. Holton has served as the department's Chief Fisheries Biologist since 1957. He was formerly Supervisor of Fisheries Field and Research Operations for the Wyoming Game and Fish Commission, and Fisheries Research Project Leader for the West Virginia Conservation Commission. Holton is certified as a Fisheries Scientist by the American Fisheries Society and is a member of the Society's Endangered Species Committee. In addition, he just completed a term as chairman of the Biological Sciences Section of the Montana Academy of Sciences. In 1950 he received a Bachelor of Science degree in zoology from the University of Wisconsin, Madison, and two years later he obtained a Master of Science degree in fish and wildlife management from Montana State University, Bozeman.

NOTE: Much of the information in this article is from files and personnel of Montana Fish and Game Department. In addition, many technical writings were consulted, particularly: "Biogeographical and Ecological Factors Contributing to the Decline of Arctic Grayling, Thymallus arcticus Pallas, in Michigan and Montana," by Robert E. Vincent. Doctoral Thesis, University of Michigan, 1962.

THE CATCHALL

by Bill Schneider

NUMBER ONE CONSERVATIONIST

The National Shooting Sports Foundation has boldly labeled the hunter as "America's number one conservationist," and it has published a booklet that states its cause.

Since the value of hunting in the management of many game populations is well documented, I highly recommend this publication.

In a circular mailed to all state conservation agencies, the foundation says this about the number one conservationist:

"It's a fact, but how many people know it?

"For instance, hunters are proud that an 11 per cent tax on their guns and ammo goes for conservation. Since 1937, more than $435 million has been collected and prorated to state game departments for land acquisition, wildlife habitat improvement and management.

"Hunters, along with fishermen, gladly pay over $180 million a year for license fees. It goes to support such programs as creating proper environment for wildlife, clean streams, law enforcement and conservation education.

"What's more, the millions of acres developed by money from hunters support more non-game species—such as song birds, shore birds, small mammals—than game species.

"Hunters owe it to themselves and to future generations of outdoorsmen to help get this message across. And they can! The whole story, along with statistics, is in a new illustrated booklet, THE HUNTER AND CONSERVATION. It tells how America's hunters have fought for conservation of all natural resources for over 75 years. How hunters, to protect the basic breeding populations of wildlife, asked for season and bag limits. How they campaigned for the establishment of state wildlife agencies and raised the money by putting license fees on themselves. How they founded conservation organizations such as the National Wildlife Federation, The Izaak Walton League of America and Ducks Unlimited.

"THE HUNTER AND CONSERVATION can create new understanding between outdoorsmen and the non-hunting public. It can help to educate youngsters. But only if you'll help to put it in their hands.

"Why not send for five copies today? When you think about it, your influence could be as big as all outdoors."

Booklets are available postpaid at the price of $1 for five copies. Send your request to National Shooting Sports Foundation, Inc., 1075 Post Road, Riverside, CT 06878.

MOVING?

If you're planning to move in the near future, please drop us a note and let us know your new address. If you don't, you might not get your next copy of MONTANA OUTDOORS.

DUST COVER

If you are on our mailing list, your Sept./Oct. issue arrived surrounded by a dust cover. The cover serves only to protect the magazine in the mail and should be torn off and thrown away.

The cover is made from 100 per cent recycled waste paper. Because the material is recycled, several trees will remain standing longer. Furthermore, the paper was re-manufactured in a manner that eliminated the need for bleaches and dyes—compounds that often cause pollution by failing to break down rapidly in the environment.

In the near future, manufacturers promise to produce a quality recycled paper that will be acceptable for the entire magazine.

By insisting on recycled paper, we like to think that we are actually doing something about preserving a quality environment instead of just talking about it.

NATIONAL HUNTING AND FISHING DAY

Hunters and fishermen will get national recognition for their contributions to conservation if Congress passes a Senate joint

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Make all checks and money orders payable to the Montana Fish and Game Department.

resolution recently introduced by Sen. Thomas James McIntyre (D-N.H.).

S.J.R. 117 asks that President Nixon declare the fourth Saturday of each September "National Hunting and Fishing Day." This year it will fall on Sept. 25 if the resolution passes.

Sen. McIntyre said, "Since there is no present national recognition of the many and worthwhile contributions of the American hunter and angler, I am asking Congress and the President to declare this special day. Hunters and anglers traditionally have led in the effort to preserve our natural resources."

1970 MONTANA BIG GAME HARVEST

The figures below are estimated from mail survey returns and rounded off to the nearest zero.

Mule Deer	85,100
White-tailed Deer	25,400
Elk	14,000
Antelope	17,500
Moose	520
Bighorn Sheep	70
Mountain Goat	350
Black Bear	1,050
Grizzly Bear	28
Total big game	144,018

A NEW EXPLOSION

Recently, there has been such an uproar over human population control that another serious "population explosion" has gone unnoticed. The Department of Transportation reports that the nation's automobile population is growing twice as fast as the human population.

FERRET SIGHTINGS

In the July/August issue, we published an article with color photographs on the black-footed ferret. The story, entitled "Montana's Mystery Mammal," was meant to familiarize you with the ferret, which is classified as endangered and on the verge of extinction. On the back cover of that issue, we asked you to contact us if you have ever seen a ferret.

Two months later, I can happily report that we have had three unconfirmed ferret sightings.

By following these leads, we hope to find more evidence and thus prove that the elusive mammal still exists in Montana.

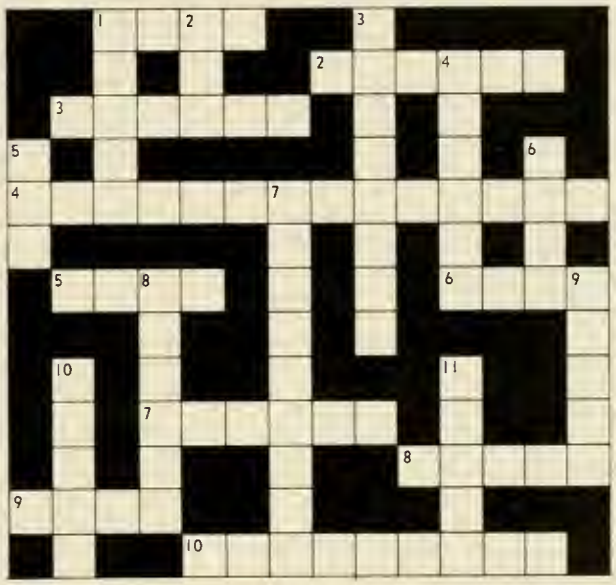
But that's not the end of it. We still need all the ferret information that we can dig up. If you think you've seen a ferret, please pass the information along to me. I'll make sure it reaches the proper hands.

ACROSS

1. Travelers often stop and _____ for the night along the recreation road.
2. Deer food, especially during winter months.
3. Many recreation road users like to take a _____ lunch along when driving on the road.
4. Lack of adequate hunter harvest often results in the_____ of game animals.
5. _____ Creek-Missouri River Recreation Road.
6. A fish nest.
7. America's number one conservationist.
8. A key factor in the management of Montana deer herds is the availability of good winter_____.
9. Structure used to produce charcoal.
10. Public hunting on private land depends on the _____.

DOWN

1. Pollution is most certainly a _____.
2. A livable environment for wildlife is a quality environment for _____.
3. A rare and beautiful member of the trout family.
4. A critical season for wildlife.
5. A female deer.
6. A new and unique addition to the state parks system is a recreation _____.
7. Man abuses his environment with many forms of _____.
8. A plant made up of algae and fungi.
9. A trip along the Recreation Road is a pleasure _____.
10. A small town along the recreation road.
11. Grayling crowd into small feeder streams to _____.



The answers to this crossword can be found in the articles in this issue. *(Key—page 31)*

"OUR LAND, OUR COMMUNITY . . ."

"We abuse the land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect. There is no other way for land to survive the impact of mechanical man."

Aldo Leopold

You accidently injure yourself while involved in your favorite outdoor recreation on private land. You feel that the landowner was negligent and decide to bring suit. It then goes to court to decide . . .

WHO PAYS?

by Louise Fenner

IMAGINE that during the big game season, three accidents occur that lead to lawsuits between landowners and hunters. How would you decide these cases?

1. A hunter asks permission to use a farmer's land and is charged $25 for access. While he is hunting, he enters a field where some rusty, broken pieces of farm equipment lie hidden by weeds. The hunter stumbles over one of the implements and breaks his leg. He sues, stating that the farmer did not keep his property in safe condition or warn him about the equipment. Will the farmer have to pay?

2. A hunter receives permission to use a rancher's land free of charge. Without the rancher's knowledge, the hunter enters a pasture where a particularly dangerous bull is kept. He does not see the animal until it is too late to turn back, and he is badly injured when the bull attacks. He sues the rancher on the basis that he wasn't warned about the dangerous animal when he asked permission to hunt. Does the rancher have to pay damages?

3. A hunter goes onto fenced property without permission. While exploring the land, he enters the ruins of an old barn and is injured when an aged ladder leading to the loft gives way. He sues for damages, arguing that the landowner was negligent in maintaining a hazard without posting warnings. Is the landowner liable for damages?

In which cases will the landowner be held liable for the hunter's injuries? This question is extremely important to any landowner who plans to allow hunters, fishermen, campers or other recreationists to use his property. It is equally important to anyone who may someday hunt or fish on private land.

In the first case, it is quite possible that the landowner would lose the lawsuit and would be held liable for the hunter's injuries—that is, he would have to pay a sum of money, called damages, to the hunter. However, in the second and third cases, the landowner would probably not be held liable.

The determining factor in these cases is not whether the hunter was given permission to enter and hunt on private land, but WHETHER THE HUNTER PAID FOR THAT PRIVILEGE. When a landowner accepts money (or some other benefit) for allowing people on his land, he also accepts a certain responsibility for keeping his property safe for them. If he neglects this responsibility and someone is injured, he may be sued and may have to pay an expensive liability claim. (This does NOT include injuries resulting from the negligent handling of a gun, for which the person with the gun is liable.)

Within the last few years a limited number of Montana farmers and ranchers have begun charging hunters and fishermen for the use of their land, for camping, meals and lodging, guiding and other services. According to Craig Whitney, F&G district information officer in Miles City, this practice is beginning to appear in the eastern part of the state, where there is a yearly flood of nonresidents who hunt under special $35 deer-only and antelope-only permits.

"The influx of so many nonresident hunters creats a seasonal economy because they need rooms, meals, transportation and guides," Whitney said. "Some landowners are beginning to see these hunters as an available economic resource and are beginning to charge them for access and services. This is an offshoot of the tourist industry, and it is coming to Montana more and more."

Charging for hunting on private land is far from a common practice yet. Nevertheless, it is often discussed among farmers and ranchers. Mons Teigen, secretary of the Montana Stockgrowers Association, said that although he has heard of isolated cases, fee hunting is still rare in Montana. "It's not developed in this state as in other states," he said. "There's still a belief

among people raised in this part of the country that hunting is part of the scene and everybody deserves a chance at it." However, he felt that fee hunting was likely to increase in Montana in the future. "I just don't know how soon," he said.

Rancher Harold Miller of Sanders agreed that fee hunting was a possibility for Montana's future. He estimated that fewer than one per cent of the landowners in his area charge for hunting on their property. However, he felt that the practice would become more common because of increased hunting pressure, particularly in eastern Montana where he lives.

Although fee hunting is not carried out extensively in Montana, both landowners and recreationists should learn what legal responsibilities it involves. In particular, **landowners who plan to charge a fee for hunting or fishing on their land should know the law concerning liability for injuries that occur on the property. They should also learn how to protect themselves against expensive liability claims.**

A landowner's legal responsibility for injuries is based on the status of the person who is using his land. This person will be classified in one of three categories: an invitee, a licensee or a trespasser.

Briefly, an invitee is a person who enters into a business relationship with the landowner as part of being allowed on the land. In the case of a hunter, he may pay a flat charge for access or camping; he may pay for his meals, lodging, transportation or for guiding services; or he may agree to confer some other benefit on the landowner. The person (e.g. landowner) who accepts this money or benefit is the invitor. By paying a fee, the invitee **serves the purposes of the invitor as well as his own purposes.**

Note that nothing has been mentioned about charging a fee based on the amount of meat or number of animals or birds taken by a hunter, or the number of fish taken by a fisherman. IT IS ILLEGAL FOR A PRIVATE LANDOWNER TO SELL GAME ANIMALS OR FUR-BEARING ANIMALS, GAME BIRDS, FISH, OR ANY PART OF THEM: AND THUS IT IS ILLEGAL FOR A LANDOWNER TO CHARGE BY THE POUND OR NUMBER OF GAME ANIMALS OR FISH TAKEN ON HIS PROPERTY.

According to Clayton Herron, the department's attorney, it would probably be held illegal for a landowner to demand fish or game animals (i.e. part of the bag) in return for granting the privilege of hunting or fishing. However, this has not yet been tested in court. It IS legal to charge for access to private property and for services such as meals, lodging and guiding.

The next catagory is that of licensee. This is a person who enters or remains on private land only by virtue of the owner's consent. He gives the landowner no business benefit in return for using his land, and thus he is **serving his own purposes and not the purposes of the landowner.** A hunter or fisherman who uses private land with permission, but without paying a fee, is a licensee.

Finally, the category of trespasser includes anyone who enters or remains on private land without permission or invitation. A trespasser can also be an invitee or licensee who extends the bounds of his invitation by staying too long or straying beyond the boundaries a landowner has set for him.

The care owed by the landowner for the safety of invitees, licensees and trespassers varies significantly. This accounts for the different degrees of liability.

A landowner owes the greatest duty of care to an invitee, a person who is paying a fee. **He does not insure the safety of the invitee, but he must exercise reasonable care to have the premises in a reasonably safe condition, to conduct operations on the premises so as not to endanger the invitee, and to warn the invitee of perils on the land.** This care includes inspection of the premises to discover possible dangerous conditions. If the invitee is injured because of failure to exercise this care, the landowner may be liable. He will have this liability whether he charges a small fee or a large one, whether he charges only for access or for guiding and outfitting—there are no degrees of liability within the invitor-invitee relationship.

These statements apply to tenants as well as to landowners. A tenant who charges people to use the property he is renting or leasing becomes an invitor. Liability rests with the invitor, whether he is a landowner, tenant (renter or lessee) or any other person in control of the premises.

Did you pay for access? If so, the landowner might be liable for your injury.

Let's go back to one of the cases mentioned at the beginning of this article and try to make things clearer. Remember, however, that all the cases are hypothetical (imaginary) and should not be considered fact. **They can only show what might happen.**

The first case involves a hunter who is injured after paying for the privilege of entering private property to hunt. Since he is an invitee, the landowner is obliged to exercise reasonable care

WHO PAYS?...

to keep the premises safe for him. The outcome of the lawsuit depends considerably upon whether or not—in the eyes of the court—the landowner fulfills this duty.

Consider the case: when the hunter enters a field he trips over some machinery that is hidden by weeds. The court might decide that the landowner did not keep the property reasonably safe. It might be argued that the farmer should have inspected his property for dangerous conditions and thus should have known about the machinery, and that he either should have corrected the dangerous condition (e.g. removing the equipment) or should have warned the invitee about it. Of course, the court must decide whether the machinery does indeed constitute a hazard and whether the invitee was injured through his own negligence or the negligence of the landowner.

NOW WE COME TO AN EXTREMELY IMPORTANT DISTINCTION: THE DIFFERENCE BETWEEN A LANDOWNER'S DUTY TO AN INVITEE AND HIS DUTY TO A LICENSEE OR TRESPASSER.

First, let's consider the trespasser. The landowner is not obliged to keep his property safe for trespassers, and he has no duty to discover, remedy or warn of dangerous conditions on the land. However, he may not, through "willful or wanton misconduct," harm a trespasser. What this means is that the landowner may not set traps for trespassers, such as pits or loaded rifles, and he may not deliberately shoot them or otherwise harm them. Likewise, he may not refrain from protecting or aiding a trespasser, if possible, **once the trespasser's danger is discovered** (for instance, if the landowner sees the trespasser walking toward a highly charged electric fence.) **Even though trespassers enter private land at their own peril, they do not become legitimate game animals themselves.**

The third case described at the beginning of this discussion involves a hunter who enters private property without permission and is injured when an old ladder breaks under him. He sues, stating that the landowner is maintaining a hazard on his property without posting a warning. **Unless some unusual circumstances intervene, the landowner would probably not be held liable for injuries because the hunter is trespassing.**

The law regarding a landowner's duty to a licensee is somewhat different. The landowner owes no duty to maintain the premises in any particular condition to insure the licensee's safety or to inspect the premises for dangerous conditions. However, if he knows of or discovers a condition that might endanger the licensee, he must exercise reasonable care to see that the licensee is warned about it. He must also exercise reasonable care to see that any active operations being carried out do not injure the licensee.

There is an exception to this general liability law. It occurs when a landowner allows a hunter, fisherman or other recreationist to use his property, facilities or services without charge. Before 1965, ranchers and farmers owed some duty to these recreationists (licensees). However, the state legislature wanted to encourage the opening of private property to free public hunting and fishing, and so it passed a law in 1965 that freed landowners from this duty (and liability) AS LONG AS THEY DID NOT CHARGE A FEE OR ACCEPT SOME OTHER "VALUABLE CONSIDERATION."

A "valuable consideration" could be a fee for access, for board and room, transportation, guiding, outfitting or other services. It may be some other benefit, even a business deal.

This is what the statute, Section 67-808 of the Montana Codes, says:

> A landowner or tenant who permits by act or implication, any person to enter upon any property in the possession or under the control of such landowner or tenant for any recreational purpose **without accepting a valuable consideration therefor, does not** by granting such permission, extend any assurance that such property is safe for any purpose, nor **confer upon such a person the status of invitee or licensee** to whom any duty of care is owed, and such landowner or tenant, **shall not be liable to such person for any injury to person or property resulting from any act or omission of such landowner or tenant,** unless such act or omision constitutes willful or wanton misconduct. (author's emphasis)

A legal interpretation of this statute has not yet been written. Therefore, no **definite** statement can be made about the legal responsibilities of landowners who offer free access to their property. Apparently, the non-paying recreationist does not have the protection usually given to a licensee, even though he is on the land with permission. Thus the landowner would not be liable (under normal circumstances) for the injuries of a license-recreationist any more than he would be liable for the injuries of a trespasser.

If a fee is charged, the land must be inspected for possible hazards.

This may be clearer if we examine one of the cases mentioned at the beginning of the article. In the second case, a hunter receives permission to use

private land free of charge, thus becoming a licensee. Without the knowledge of the landowner, he enters a field where a dangerous bull is kept and is injured. He then sues the landowner.

Since the hunter is a licensee, not an invitee, the landowner owes him no duty of care and is not obliged to assure his safety on the property. **The landowner would probably not be held liable for the licensee's injuries, since under the 1965 statute he has no legal obligation to warn him of the danger** unless he knows that the licensee is walking into a dangerous situation.

In Montana there have been no actual cases since the 1965 liability law was enacted, in which an injured hunter has sued a landowner. However, the statute was tested once in 1970 when the Montana Power Company was sued because of injuries received when a man fell off a flatcar belonging to the company (State ex rel Tucker vs. District Court (Stillwater County, 1970)). He and a group of friends were camping and fishing in the Beartooth Primitive Area near Mystic Lake and were using, with permission, a flatcar to haul their gear to a boat launching site. He fell off, was run over and was badly injured. The court decided in favor of Montana Power, partly because it had not charged for the use of the flatcar. **The man was a licensee and thus the company was not liable for his injuries.**

Landowners should consult an attorney before charging for the use of their land.

As to what a court of law will decide in any particular case, it is not the function of this article to predict. There can only be given the most general idea of the law regarding liability of landowners who allow hunters, fishermen and other recreationists on their property. ANY LANDOWNER WHO IS CONSIDERING CHARGING A FEE FOR ACCESS OR FOR ANY SERVICE SHOULD FIRST CONSULT WITH AN ATTORNEY ON THE QUESTION OF HIS LEGAL RESPONSIBILITIES AND LIABILITIES.

Another person the landowner should consult is an insurance agent who can supply him with the necessary protection against liability claims. More coverage will be needed if the property is used by paying recreationists than if the property is used without charge. Landowners who offer guiding or outfitting services will probably need even more protection. Because of the many variables that make every case unique, each landowner should make personal arrangements with his insurance agent.

Finally, **if a landowner intends to offer guiding service, he must first contact the Montana Fish and Game Department to obtain the proper license.**

The regulations for the 1971 hunting season state that a Resident Outfitter's License, available for $10, is necessary for anyone who guides for a fee. According to Erwin Kent, assistant chief of the department's Law Enforcement Division, this license is not required if no charge is made for guiding. A hunting license is needed to guide nonresidents (whether or not the guide hunts), but nothing is required to guide residents (unless, of course, the guide also hunts).

These requirements will change after May 1, 1972, because of a law passed by the last legislature. A landowner who guides on his own property, with or without a fee, will need only a current conservation license—which costs 25¢. However, if he guides anywhere else, he will need the resident outfitter's license, which will cost $50 after May 1, 1972. Check with the Fish and Game Department if you are in doubt about your own situation.

One thing should be obvious from this discussion—that **any landowner who trades his right to keep persons off his land for money or other profit takes on a great deal of responsibility. Before he charges anyone for entering his land or accepting his services, he should find out what it means to him legally and financially.**

Attorney Clayton Herron has suggested a list of steps all landowners should take if planning to start fee hunting on their property:

1. Consult your attorney.
2. Consult your insurance agent.
3. Keep your bridges, building and fences in a reasonable state of repair.
4. Be on the lookout for your invitees so that your operations or your employees' operations won't endanger your customers.
5. Be sure to post warning as to dangerous conditions (swamps, bulls, building, etc.).
6. Consult with the Fish and Game Department about guiding license requirements.

The landowner who opens his property is making available outdoor recreation opportunities that would otherwise be lost to the public. Whether he charges or not is his decision. It is important—vitally important—that both he and the people whom he allows on his property know exactly what this decision means.

F&G NEWS

A LIVEABLE ENVIRONMENT FOR WILDLIFE IS A QUALITY ENVIRONMENT FOR MAN.

Dunkle honored nationally for his conservation work

HAVRE—Fish and Game Department Director Frank H. Dunkle received a 1971 American Motors Conservation Award recently in honor of his professional activities in the field of conservation. The award praised his administrative abilities as well as his efforts throughout the West and Canada to promote sound resource management.

Don Aldrich, executive secretary of the Montana Wildlife Federation, presented the award at the federation's 36th annual convention in Havre June 12. He commended Dunkle's "outstanding managerial ability" and the professionalism of his staff.

Dunkle, 46, has been director of the Fish and Game Department since October, 1963. Before that he served as chief of the department's Information and Education Division.

The American Motors Award is presented annually to 10 professional and 10 non-professional conservationists. Dunkle was nominated last fall by the Montana Wildlife Federation and was endorsed by conservationists throughout the country. The award consists of $500 and a bronze sculptured plaque.

The citation honoring Dunkle reads:

"Because, as director of the Montana Fish and Game Department, he has brought a high level of professional administration to a field often marked by dissension and partisan politics . . .

Because he has led the department into a program of broadening concern for the environment . . .

Because he has worked tirelessly with many interested groups, not only in Montana but in other western states and Canadian provinces, to promote understanding of the scientific management of natural resources . . .

Because in these and other ways he exemplifies the finest traditions of the professional conservationist in America . . .

Therefore, it is the honor and the privilege of American Motors Corporation to present one of ten Professional Awards for 1971 to FRANK H. DUNKLE of Helena, Montana."

Frank Dunkle shown receiving his American Motors Conservation Award at the Montana Wildlife Federation annual meeting. From left to right—Don Aldrich, federation executive secretary, Frank Dunkle and Gay Easton, federation president.

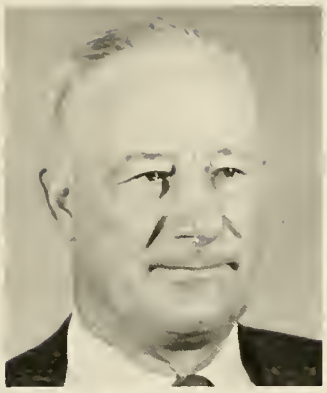
Governor fills vacancies on F and G Commission

HELENA—Carl W. Harbaugh, Sr. of Jordan and Jack E. Cohn of Helena have been appointed to fill vacancies on the Montana Fish and Game Commission. They join Willis Jones, Arnold Rieder and Robert Emmons in making up the five-member board.

Governor Forrest Anderson announced the appointments July 3, naming Harbaugh to a term ending April 11, 1972, and Cohn to a two-year term ending April 11, 1973.

Harbaugh, 69, owns a ranch near Jordan where he has lived since 1910. He raises cattle, sheep and horses. He has long been concerned with predator control and is currently chairman of the Predator Control Program for Garfield County. In addition, he has been active in the community and has served on both the high school and elementary school boards. Harbaugh, who represents Commission District No. 4 in northeastern Montana, has hunted and fished on his

Jack E. Cohn



Carl W. Harbaugh, Sr.

ranch and in the Jordan area all his life. His family includes his wife, Margie, and three children, Carl Jr., Harold and Don, now all adults.

Cohn, 43, represents Commission District No. 1 in western Montana. He has been math instructor and coach at Helena Senior High for the past 16 years, and was formerly Superintendent of Parks and Recreation for the City of Helena. He now serves as city Recreation Consultant. Cohn obtained a Bachelor of Science degree in zoology at Montana State University, Bozeman, in 1951, and has additional majors in biology, entomology, health and math. In his free time he is an ardent hunter and fly fisherman. He and his wife Colleen have two sons, Bill, 16, and Tom, 10.

The feelings of both new commissioners were expressed in a statement made recently by Cohn: "It is my firm belief Montana must not only be concerned with the present status, preservation, development and needs of our hunting, fishing and recreation in this state, but must look to the future and carefully plan for it."

Department names fisheries biologist

LEWISTOWN — Duane E. Phinney, 31, of Steptoe, Wash., is the department's new Fisheries Project Biologist in Lewistown. Phinney replaces Dick Baldes, who recently transferred to the U.S. Fish and Wildlife Service in Arizona.

After receiving his Bachelor of Science and Master of Science degrees in Fisheries Science from the University of Washington, Seattle, Phinney worked for the Fisheries Research Institute at the University. Before accepting the position at Lewistown, he spent three years working for the Washington Department of Fisheries in Aberdeen.

Phinney and his wife Elizabeth have two children, Wendy, 2, and David, five months.

Before transferring to Arizona, Dick Baldes wrote an article for MONTANA OUTDOORS which described the effects of channelization on the ecology of a small stream. The article, entitled "A Bad Spring on a Big Creek" (July/August issue), discussed the changes in Big Spring Creek near Lewistown after channelization. Public response to the article has been considerable, and reprints are being planned.

Duane Phinney

Burk receives writing award

HAVRE—Dale Burk, state editor of the Missoulian (daily newspaper, Missoula, Mont.), has been named "Conservationist of the Year" for 1971 by the Montana Wildlife Federation. The award was made June 12 at the federation's 36th annual meeting in Havre.

Burk was honored for "his efforts to bring public involvement to the field of resource management." As outdoor writer and columnist for the Missoulian, he has written many articles on conservation and environmental issues.

Elizabeth Smith, Bozeman, board member of the federation, presented the award. She praised Burk's interpretive reporting of issues relating to conservation during the 1971 legislative session. She said his articles on SB 298, which would have changed the law regarding the firing of the Fish and Game Department director, were important factors in defeating the measure.

Other subjects Burk has dealt with include the Lincoln Back Country, the Alice Creek mining development, the Middle Fork of the Flathead River and timbering practices in the Bitterroot National Forest. His articles about timbering practices have been compiled into a book called *The Clearcut Crisis: Controversy in the Bitterroot*, published in 1970.

Dale Burk (right) accepts his "Conservationist of the Year" award from Gay Easton, president of the Montana Wildlife Federation.

ANSWERS TO CROSSWORD: ACROSS—1. camp 2. browse 3. picnic 4. overpopulation 5. Wolf 6. redd 7. hunter 8. range 9. kiln 10. landowner DOWN—1. crime 2. man 3. grayling 4. winter 5. doe 6. road 7. pollution 8. lichen 9. drive 10. Craig 11. spawn

It's not just another road

by Louise Fenner

If the recent trend towards high-speed, high-tension driving bothers you, it should be comforting to know that there is now one road left for pleasure driving.

A BLUE-RIBBON trout stream . . . shady campsites and picnic areas . . . fascinating and varied geologic formations . . . sheer shale cliffs covered with brightly colored lichens . . . forested mountains and gently rolling cropland . . . a chance to take an unhurried, uncrowded scenic drive.

All this can be found along the Missouri River-Wolf Creek Canyon Recreation Road north of Helena. The road, which is part of old U.S. Highway 87, runs parallel to Interstate 15 between Helena and Great Falls, but it bears little resemblance to that high-speed thoroughfare. Instead, it consists of about 35 miles of scenic, gently winding road that is designed to let the traveler leave the Interstate and enjoy the prime fishing and

WOLF CREEK-MISSOURI RIVER RECREATION ROAD—the newest innovation in Montana's state parks system. (F&G photo by Bill Schneider)

beautiful scenery of Missouri and Wolf Creek Canyons, all the while continuing toward his destination.

The route, which has been in use since spring of 1970, is the first in Montana to be designated by the Montana Fish and Game Commission as a recreation road. This classification was made possible by an act of the 1969 State Legislature which empowered the commission to designate suitable areas for recreation purposes. The successful completion of the road resulted from the cooperative effort of the Montana Fish and Game Commission, the Montana Highway Commission and private landowners.

Beginning about 30 miles north of Helena, Recreation Road follows Little Prickly Pear Creek north through a colorful narrow canyon, then enters a broad valley dotted with ranches. It passes through the little town of Wolf Creek and begins a parallel course with the Missouri River, which is classified at this point as a blue-ribbon trout stream. Near the village of Craig the broad valley narrows and Recreation Road winds between the sheer cliffs of the Missouri River Canyon. Near Hardy Creek the road rejoins the Interstate, which continues north to Great Falls. Since the recreation road accommodates two-way traffic, this exit point can, of course, be an entrance point for travelers going in the opposite direction.

A series of nine interpretive displays describes points of interest along the way, such as the geological history of the area, important facts about ecology and the types of fish found in the streams. The Fish and Game Department designs and maintains these displays, which provide an interesting self-guided tour.

Spur-of-the-moment travelers will find gas, food and supplies at several points along the route.

ON THE ROAD

The best way to tell you about the Missouri River-Wolf Creek Canyon Recreation Road is to take you there . . .

Perhaps you are from out-of-state and you are tired of monotonous freeway driving. You want to take a close, leisurely look at Montana's beautiful scenery. You also hope to see some wildlife—perhaps a mule deer just off the road, or a mountain goat or bighorn sheep high on the rocky canyon walls.

Perhaps you have heard about the brook trout that frequent the fast waters of Little Prickly Pear Creek and the rainbow and browns lurking in the Missouri River. If you have a boat, you will be looking for one of the launching sites on the Missouri.

Or perhaps you are from Helena, seeking diversion from your daily routine in a leisurely weekend camping trip or an after-five drive or picnic. You pack your fishing rod and take off.

Whatever your reason for traveling Recreation Road, you will not be disappointed. If you come from the south, you can leave Interstate 15 and join Recreation Road at a point about 30 miles north of Helena. Four other junctions also connect the Interstate and the road--these are located at Wolf Creek, Craig, Canyon Interchange and at the north entrance, near Hardy Creek. Both north and south entrances display colored orientation maps to guide you.

From the south, the road curves gently as it follows the bends of Little Prickly Pear Creek. If it is spring or early summer, bright wildflowers cover the hillside and cling to the canyon walls. Shady spots by the stream have been set aside as camping and picnicking areas. Litter barrels every few miles emphasize the fact that the area is remarkably clean and litter-free—and should stay that way.

What you first notice is the color of the cliffs around you. These rock walls are not merely grey and brown, but spectacular red and green, a result of small quantities of iron in differing chemical conditions. In some of the highway cuts definite colored layers of rock are visible, some curved and folded by the building processes that formed the Rocky Mountains millions of years ago.

One of the first interpretive displays you find is mounted on a huge boulder of Spokane Shale which once tumbled down from the hillside and came to rest near the road site. In non-technical language, the display relates some of the geologic history of the area—how the rock was formed, and why it displays the multicolored and curved layers.

A little farther down the road at Little Creek you will find an interesting geologic formation called "Two Medicine," which has been partially exposed by the highway cut. Here you will see layers of igneous rock nearly 80 million years old, formed by the ash and lava of ancient volcanoes. The total depth of these layers is more than 2,000 feet. Nearby is the site of an ancient landslide, which forms a small hill that is cut in two by the path of the road.

EDITOR'S NOTE—Louise Fenner, 23, was graduated from the University of Montana, Missoula, in 1970 with a Bachelor of Arts degree in journalism. She has served as editorial assistant on MONTANA OUTDOORS since joining the department in November, 1970.

another road...

Blanketing the rocks along the way, moss and lichens display oranges and yellows that blend in with the reds and greens of the cliffs. Lichens thrive under extremes of temperature, light and moisture that often make it impossible for other plants to survive. You may also find lichens growing on tree trunks and on the ground, where they resemble tufted carpets. They can even grow on weathered bones and glass, depending on the existence of the blue-green algae that help form them. A display panel at Lyons Creek near the beginning of your drive shows a greatly enlarged drawing of the lichens and points them out on the hillside.

On a small hill near the south entrance you will see the scar left when a forest fire destroyed a densely wooded stand of Douglas fir trees a few years ago. Fortunately, the fire was limited to a small area and did not kill some large pine trees growing on the hill's ridge. A few Douglas fir survived the flames and are now the largest trees on the hillside, which has already begun to reseed. Since the site became more exposed to sunlight and consequently drier after the fire, pine trees may replace the fir, which need moister conditions. If left without further disruption, the slope will eventually return to the forest it used to be, and

Recreation Road offers free access to some of the finest fishing in Montana. The man shown here is trying for small pan-size trout in Little Prickly Pear Creek, which parallels the southern portion of the road. The northern section of the road follows almost curve for curve the blue-ribbon Missouri River, which is nationally known for its trout fishing. (F&G photo by Bill Schneider)

In addition to excellent fishing, the mighty Missouri also has its scenic value. (F&G photo by Bill Schneider)

the scars will disappear—but it will take many years.

As the road leaves the narrow canyon and enters the broad valley of the Missouri River, the scene changes significantly. Forested hills recede into the distance, and the base of the valley becomes flat and green with crops. Here the soil is fairly rich because of deposits left by ancient glaciers.

Near the town of Wolf Creek, the road passes an ancient kiln once used to produce charcoal for the trains that swept through the valley at the turn of the century. The ancient structure has not been used for some 60 or 70 years and is partially caved in. Although it stands close enough to the road for good photographs, it is privately owned and cannot be explored. If the kiln is someday purchased by the Montana Fish and Game Commission, an interpretive display describing its historic value may be developed.

North of Wolf Creek you will encounter a bridge which marks the point where Recreation Road begins its parallel course with the Missouri River. This section of the Missouri from Wolf Creek to the Smith River is nationally known as a blue-ribbon trout stream, a classification made by the Montana Fish and Game Commission. It offers some of the finest fishing in Montana.

Photographed from one of the many picnic areas that line the road, this scene exemplifies the serene atmosphere found there. The peaceful scenery along the road tends to unwind the motorist's nerves and make him welcome the absence of high-speed interstate driving. (F&G photo by Bill Schneider)

One of the most scenic areas along the road is an unusual rock formation called Mountain Palace. (photo by John Paxson)

Recreation Road closely follows the Missouri through its canyon. (F&G photo by Bill Schneider)

another road...

(If you prefer lake fishing instead, a nearby turnoff will take you to Holter Lake.) Access to the Missouri is easy, since the road is never more than a few hundred yards from the river.

A Fish and Game Department display at the bridge describes the many species of fish available in Montana waters. The game fish you will find are rainbow, brown and cutthroat trout and mountain whitefish. You will also encounter non-game species such as carp, long-nosed and white suckers, and a good trout bait, the mottled sculpin. These species are all fairly common in Montana, but sometimes you will find a less familiar species on the end of your line—yellow perch, kokanee (salmon), largemouth bass, pumpkinseed, burbot (also called ling), mountain sucker, flathead chub or stonecat. Although you may be determined to catch a rainbow, some of these other species also make good eating.

Another attraction along this part of Recreation Road is the large colonies of cliff swallows that inhabit the area. You may see clusters of nests fastened to cliffs, under the eaves of outbuildings or bridges. These unique structures are shaped something like bee hives, with the large end attached to a rock or foundation, and the smaller end extending outward horizontally. They are basically constructed of mud pellets mixed with straw, and are lined with feathers.

A description of the swallows is presented on a display at the bridge. They are small birds, averaging six inches in length, with a slightly notched tail less than one-half the length of the wing. Coloring is steel blue on the upper parts, chestnut and whitish on the breast. Swallows lay from three to five eggs, which are speckled and spotted with reddish-brown and lilac. They live in large colonies and seem to be constantly rushing and hurrying back and forth. In any area within a few miles of the nest where insects fill the air, swallows can be seen darting up and down or soaring high in circles in search of food.

As you continue north on the road, following the bends of the Missouri, you will be retracing the route taken by the Lewis and Clark Expedition more than 150 years ago. In 1805 the explorers traveled up the Missouri in boats called pirogues, enduring one of their most difficult ordeals when they had to portage around the falls where the city of Great Falls now stands. Although the circuit was only 18 miles, it took the Expedition 31 days to complete. A year later a small group of men came back down this section of the Missouri to meet with Lewis and his party, who were waiting at the mouth of the Marias River.

At a point near the village of Craig, the Missouri canyon narrows and becomes steep-sided. Here you will enjoy some of the most spectacular scenery along the route. The rock walls are high and craggy—some are oddly shaped by the erosion of the river and others reveal the scars of ancient volcanic activity.

One of the area's outstanding features is a majestic butte called Mountain Palace. It rises from the banks of the Missouri, carved over a period of millions of years by the flow of the river as it etched a channel through the softer portions of rock. Mountain Palace and the canyon walls are composed of rock called the "Adel Volcanics," which was formed some 60 million years ago by volcanoes. Geologic evidence of this activity, such as dikes and breccia flow, can easily be spotted from the road.

You are nearing the end of the drive. Once more the valley becomes broad and flat as you rejoin Interstate 15. If you are more relaxed than when you left it, then Recreation Road has accomplished its purpose.

Still a relatively new concept in outdoor recreation, drives such as the Missouri River-Wolf Creek Recreation Road are certain to become more common to the Montana traveler. The Montana Fish and Game Commission is considering other sites worthy of the designation.

Recreation roads such as this one have much to offer. They provide quick and easy access to camping, picnicking, fishing and other outdoor activities. They present a safe route for travelers unfamiliar with the country and unwilling to venture up an unknown dirt road. They offer a relaxing escape from the speed and monotony of highway travel. And they show Montana at her best—beautiful, uncrowded and accessible to everyone.

NEXT TIME

Look for these features in the November/December issue.

. . . nonresident hunters

. . . watershed management

. . . forest fires and wildlife

. . . frostbite

. . . a big buck—where and how

. . . the mountain lion

. . . smoked fish

. . . and lots more.

THE HUNTER'S MOON

ONCE again frost-sharpened colors tint the landscape, the harvest moon stimulates outdoorsmen to prepare for the hunter's moon which follows, and the annual harvest of our big game will be underway. Hunting is as old as mankind, and sportsmen will respond to Nature's signals as long as there are men. Today, hunting is rarely a food necessity for people, but is more a well-being necessity—an alliance with nature on face to face terms if even for short periods, an annual re-creation.

As hunting has become less and less an outright survival activity for man, it has become more and more an absolute survival necessity for big game. As more and more uses are demanded of the land, the ecological balances become more delicate and fragile. Game animal survival through the winter from area to area depends on the adequacy of the hunter harvest, for this gives the land and plants protection from winter abuse.

Many thousands of Montanans eagerly participate in the annual growth and harvest cycle, whereby in Montana good hunting helps perpetuate good hunting.

Equally important as the relationship of hunter to big game is the relationship of hunter to landowner. By devoting as much attention to detail when dealing with landowners as they do when preparing for hunting, sportsmen can insure their present and future access to most private lands as well as the many kinds of public lands now available.

Leaving gates as they are found, handling firearms safely, not molesting stock, buildings or non-hunters and not littering all translate into the Courtesy, Consideration and Common Sense that are the trademarks of true sportsmen. Few activities have more potential for a person to exercise all his mental and physical capabilities and skills simultaneously than hunting. This may be why so many people place such a high value on hunting as recreation. Now is the time of year that so vividly dramatizes the meaning of our motto: a liveable environment for wildlife is a quality environment for man.

Frank H. Dunkle

FRANK H. DUNKLE

A LIVABLE ENVIRONMENT FOR WILDLIFE IS A QUALITY ENVIRONMENT FOR MAN

THE ARCTIC GRAYLING

"The grayling, the 'lady of the streams,' is as trim and graceful, and withal as beautiful as a damsel dressed for her first ball. Her lovely iridescent colors and tall gaily-decorated dorsal fin, which might be compared to a gracefully waving plume, must be seen fresh from the water to be properly appreciated."

(For a close look at the Arctic grayling, one of Montana's rare wildlife species, turn to page 18.)